

EXHIBIT A

(12) **United States Patent**
Milanowski

(10) **Patent No.:** **US 7,013,754 B2**

(45) **Date of Patent:** **Mar. 21, 2006**

(54) **BICYCLE PEDAL ADAPTER**

(76) Inventor: **Todd Milanowski**, 592 D'Onofrio Dr.
Apt. C, Madison, WI (US) 53719

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 485 days.

(21) Appl. No.: **10/417,458**

(22) Filed: **Apr. 16, 2003**

(65) **Prior Publication Data**

US 2003/0192399 A1 Oct. 16, 2003

Related U.S. Application Data

(63) Continuation of application No. 09/923,890, filed on Aug. 7, 2001, now abandoned.

(51) **Int. Cl.**
G05G 1/16 (2006.01)

(52) **U.S. Cl.** **74/594.6**

(58) **Field of Classification Search** 74/562,
74/563, 594.1, 594.4-594.7

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,388,935 A	8/1921	Tamble
1,972,701 A	9/1934	Carlson et al.
2,548,988 A	4/1951	McDonald
2,751,797 A	6/1956	Pearl

3,964,343 A	6/1976	Lauterbach
4,345,487 A	8/1982	Straker
4,599,914 A	7/1986	Dunn et al.
4,889,010 A	12/1989	Ross
4,942,778 A	7/1990	Bryne
D341,108 S	11/1993	Chen
5,398,570 A	3/1995	Chae
5,673,597 A	10/1997	Lin
5,687,619 A	11/1997	Bryne
5,806,379 A	9/1998	Nagano
6,339,972 B1	1/2002	Paris

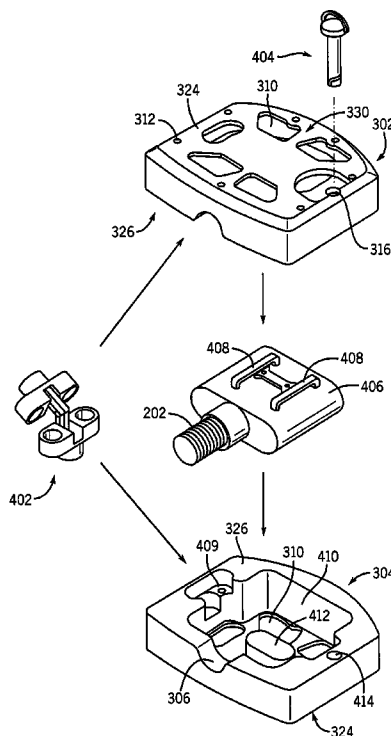
Primary Examiner—Chong H. Kim

(74) *Attorney, Agent, or Firm*—Quarles & Brady LLP

(57) **ABSTRACT**

A bicycle pedal adapter and bicycle pedal assembly is disclosed for use on a bicycle having a crank arm and a clipless bicycle pedal supported by the crank arm, wherein the pedal includes engagement structure engageable with a shoe having complementary structure for fixing the shoe to the pedal. In one embodiment, the bicycle pedal adapter includes a first portion engaging the clipless bicycle pedal and covering at least a portion of the engagement structure to eliminate the need for the shoe having the complementary structure. A second portion is coupled to the first portion. The clipless bicycle pedal is received in a cavity defined between the first and second portions. At least one engagement surface is formed on at least one of the first and second portions, wherein the at least one engagement surface is engageable with a shoe not having the complementary structure to pedal the bicycle.

16 Claims, 4 Drawing Sheets



U.S. Patent

Mar. 21, 2006

Sheet 1 of 4

US 7,013,754 B2

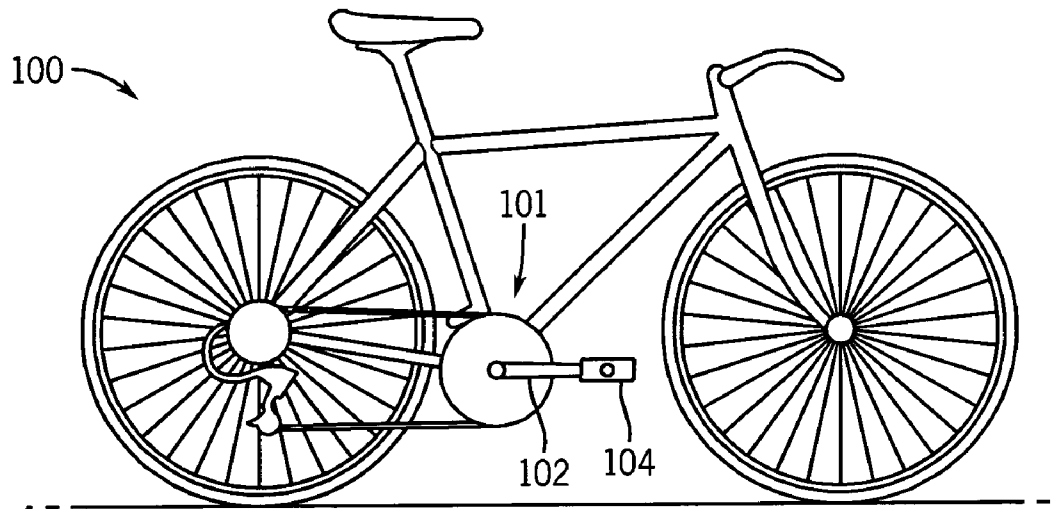


FIG. 1

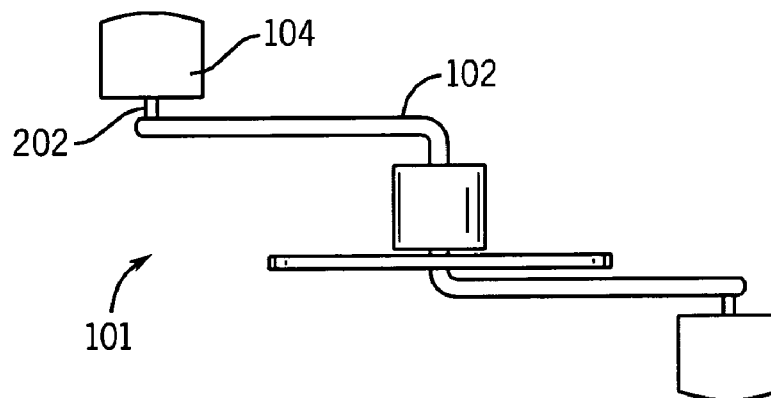


FIG. 2

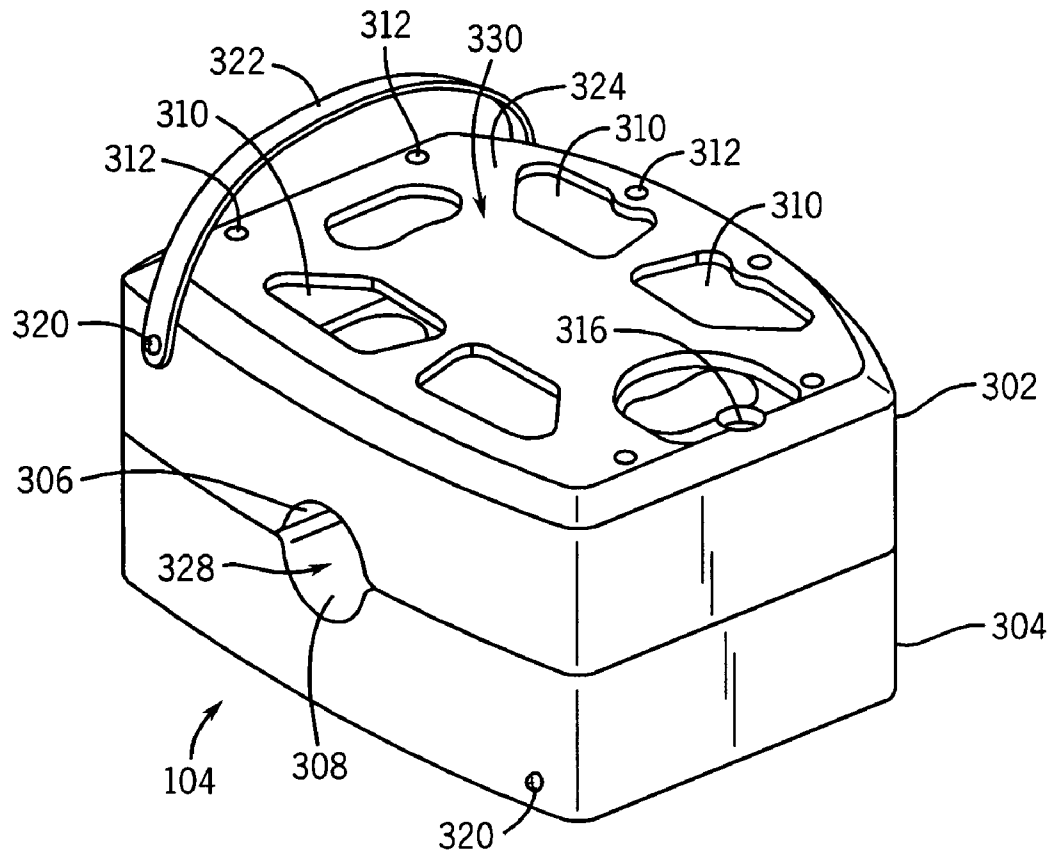


FIG. 3

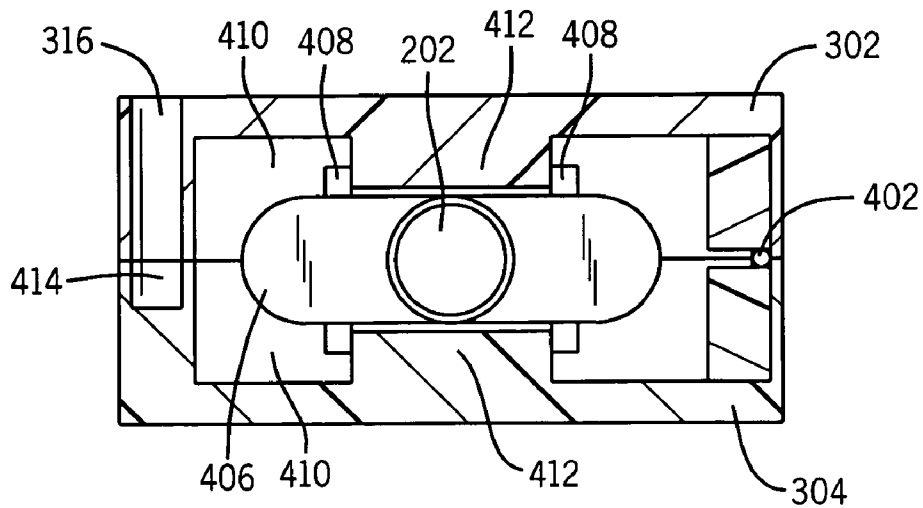
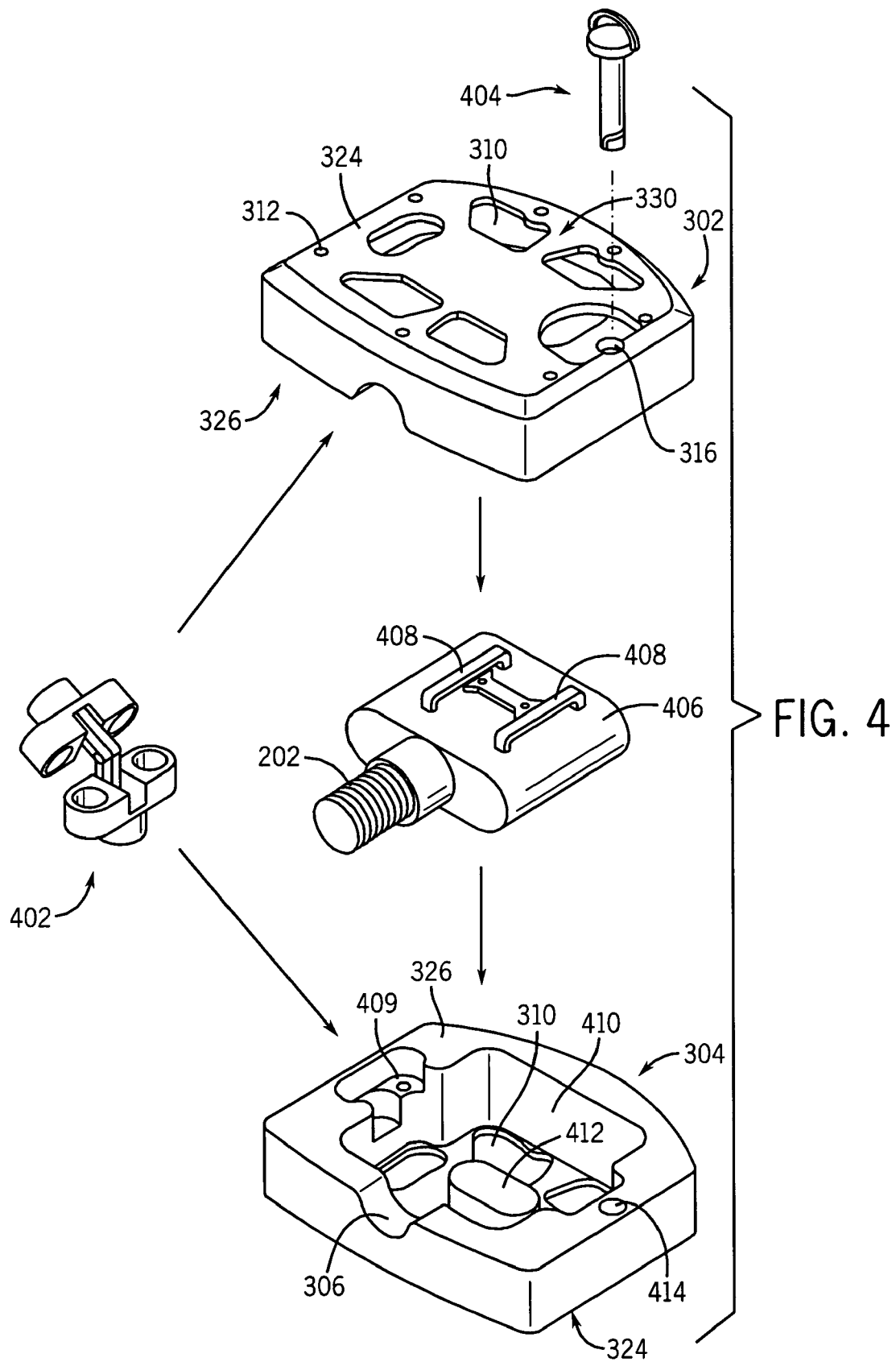


FIG. 5



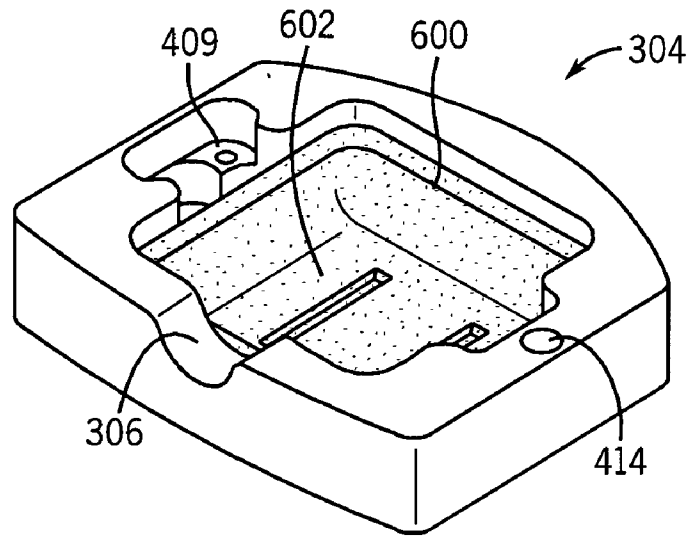


FIG. 6

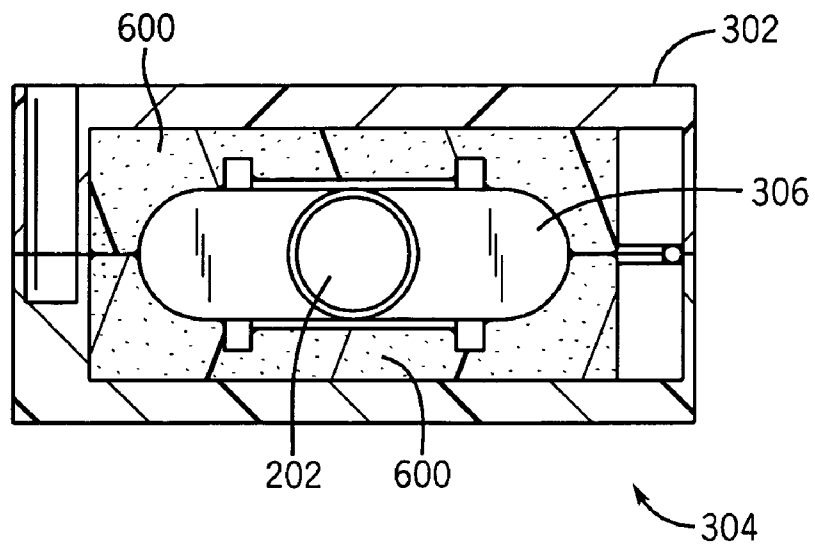


FIG. 7

US 7,013,754 B2

1

BICYCLE PEDAL ADAPTER**CROSS REFERENCES TO RELATED APPLICATIONS**

This application is a continuation of U.S. patent application Ser. No. 09/923,890 filed on Aug. 7, 2001, now abandoned.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH

Not Applicable

TECHNICAL FIELD OF THE INVENTION

This invention relates to the field of bicycles and more specifically to a pedal adapter.

BACKGROUND

Many bicycle riders prefer to use clipless bicycle pedals for racing and operation over rough terrain. Clipless bicycle pedals are bicycle pedals that have locking mechanisms that can engage the cleats on the bottom of special shoes worn by a bicycle rider. This allows for a tight fit between the shoes of the user and the clipless bicycle pedal. This provides for efficient pedaling when the special bicycle shoes are worn.

However, often times a bicycle rider may wish to go on a short trip or a relaxing ride and may not want to wear special bicycle shoes. In order to do this the bicycle rider is required to either change bicycle pedals, a time consuming process, or use a different bicycle, which is costly. What is needed is an inexpensive way to convert a clipless bicycle pedal to a standard bicycle pedal.

SUMMARY OF THE INVENTION

The present invention provides a bicycle pedal adapter and bicycle pedal assembly for use on a bicycle having a crank arm and a clipless bicycle pedal supported by the crank arm, wherein the pedal includes engagement structure engageable with a shoe having complementary structure for fixing the shoe to the pedal. In one embodiment, the bicycle pedal adapter includes a first portion engaging the clipless bicycle pedal and covering at least a portion of the engagement structure to eliminate the need for the shoe having the complementary structure. A second portion is coupled to the first portion. The clipless bicycle pedal is received in a cavity defined between the first and second portions. At least one engagement surface is formed on at least one of the first and second portions which is engageable with a shoe not having the complementary structure.

A general objective is to provide an adapter for a bicycle pedal which eliminates the need for a special shoe. This objective is accomplished by providing an adapter which is fixed to a pedal by sandwiching the pedal between two adapter portions to eliminate the need for special shoes.

Technical advantages of the present invention include the ability to ride a bike without special shoes. Other technical advantages are apparent from the following descriptions, illustrations and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and advantages thereof, reference is now made to the

2

following descriptions, taken in conjunction with the following drawings, in which like reference numerals represent like parts, and in which:

FIG. 1 is a drawing of a bicycle illustrating a pedal assembly having a crank arm that supports a clipless pedal;

FIG. 2 is a view of the pedal body of FIG. 1;

FIG. 3 is a perspective view of a pedal adapter incorporating the present invention for use on the pedal assembly of FIG. 2;

FIG. 4 is an exploded view of the bike pedal adapter of FIG. 3;

FIG. 5 is a cross sectional view of the bike pedal adapter of FIG. 3;

FIG. 6 is a perspective view of a bottom portion of a bike pedal adapter incorporating the present invention and showing an alternative means to secure a clipless pedal with an insert; and

FIG. 7 is a cross sectional view of the bike pedal adapter of FIG. 6, and having a removable insert.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to FIGS. 1-4 a bicycle **100** includes a pedal assembly **101** having a crank arm **102** that supports a clipless pedal **406**. The clipless pedal **406** is rotatably coupled to the crank arm **102** by a pedal shaft **202**, and includes engagement structure **408** which requires a special shoe. A pedal adapter **104** is placed over the clipless pedal **406** to allow the user to operate bicycle **100** without the need of special cleated shoes.

Referring to FIGS. 3 and 4, the pedal adapter **104** is attached to the pedal **406** and covers, or otherwise renders inoperable, the engagement structure **408** to eliminate the need for the special shoe. The adapter is fixed to the pedal by sandwiching the pedal **406** between the top and bottom adapter portions **302, 304** joined by a hinge **402**. Preferably, the top and bottom portions **302, 304** enclose the clipless pedal sandwiched therebetween.

The hinge **402** couples the top portion **302** and bottom portion **304** in a clam-shell fashion to allow the portions **302, 304** to be easily slipped around the pedal **406**. The hinge **402** can be molded to the top portion **302** and bottom portion **304**, screwed into the top portion **302** and bottom portion **304**, or coupled to the top portion **302** and bottom portion **304** in any other fashion. Although a hinge **402** is preferred, it is not required, and the top portion **302** and bottom portion **304** can be secured to the pedal **406** by two or more latching devices.

Each adapter portion **302, 304** includes an outwardly facing **324** side having a user engagement surface **330** for engagement by the user to pedal the bicycle **100** and an inwardly facing side **326** which engages the pedal **406**. When the pedal **406** is enclosed by the top and bottom portions **302, 304**, the pedal shaft **202** extends through a cylindrical shaft opening **328** defined by semicircular shaft openings **306, 308** formed in the top portion **302** and bottom portion **304**. The shaft opening **328** is sized to allow the pedal adapter **104** to rotate with the clipless pedal **406**, and thus, not impede pedaling the bicycle **100** or free rotation of the pedal **406**.

A number of through holes **310** are formed in the adapter portions **302, 304** to decrease the weight of pedal adapter **104** and allow for water and mud to escape through openings **310**. Advantageously, a lanyard or cable can be passed through the holes **310** to secure the bicycle **100**.

Traction screw holes **312** are formed in the outwardly facing engagement surfaces **324** for accepting traction

US 7,013,754 B2

3

screws **313**. Traction screws are small pieces of plastic or metal that may be inserted into traction screw openings **312** to inhibit slippage between a user's shoe and the pedal adapter **104**.

The number and position of traction screw holes **312** and through holes **310** are shown for illustrative purposes only and can be placed in other arrangements. Moreover traction screws can be molded directly into the outwardly facing surfaces of the top and bottom portions without departing from the scope of the present invention. In addition, other traction mechanisms, such as grooves (not pictured) can be formed in the engagement surfaces in place of or with traction screws to help a shoe stay on the pedal adapter without departing from the scope of the present invention.

A top lock opening **316** extending through the top portion **302** is aligned with a bottom lock opening **414** extending into the bottom portion **304** for accepting a locking screw **404**. The locking screw **404** extends through the top lock opening **316** and threadably engages the bottom lock opening **414** to secure the top portion **302** to the bottom portion **304**. Preferably, the locking screw **404** is a quarter turn screw. A quarter turn screw is convenient because it can be removed and replaced without a special tool. Although a quarter turn screw can be used, it is appreciated by those skilled in the art that any other similar latching devices that can secure top and bottom portions may be utilized such as a clip.

As shown in FIGS. **4** and **5**, the pedal **406** is received in pedal cavities **410** formed in the inwardly facing sides **326** of the top and bottom portions **302**, **304**. Advantageously, positioning the pedal **406** in the cavities **410** completely covers the pedal engagement structure **308** to eliminate the need for special shoes. Although cavities **410** formed in both adapter portions **302**, **304** is disclosed, a cavity for receiving the pedal can be formed in only one portion, or the portions can be formed without cavities and the pedal is sandwiched between the portions to allow use of the pedals without engaging the pedal engagement structure with special shoes, without departing from the scope of the present invention.

The inwardly facing sides **326** include a boss **412** which extends inwardly toward the pedal **406** from the inside each cavity **410**. The boss **412** securely engages the clipless pedal **406** by exerting pressure on the clipless pedal **406** when enclosed in the adapter **104**. In one embodiment, the boss **412** is coated with a friction enhancing material, such as a fabric, rubber or other elastomeric material, and the like, in order to reduce relative movement between the pedal **406** and adapter **104**. Of course, friction enhancing material can also be applied directly to other portions of the inwardly facing side **326** of the adapter **104** for engagement with the pedal **406** without departing from the scope of the invention. Advantageously, due to the secure hold on the clipless pedal **406** by the adapter portions **302**, **304**, the entire pedal adapter **104** can rotate about shaft **202** in the same fashion as the pedal **406**.

Preferably, a hinge receptacle **409** is formed in each adapter portion **302**, **304** for receiving an end of the hinge **402**. Although a hinge cavity is preferred, a hinge, if provided, can be attached to a surface of each of the portions without departing from the scope of the present invention.

As shown in FIG. **3**, a toe strap **322** can be secured to the pedal adapter **104** via toe strap screws **320**. The toe strap **322** secures a user's foot to the pedal adapter **104**. Toe strap **322** may be mounted to either portion **302**, **304** of the pedal adapter **104**.

In operation, a user fixes an adapter to a pedal by disengaging the locking screw **404** from the adapter **104** to

4

at least partially separate the adapter portions **302**, **304**, and positioning the pedal **406** between the portions **302**, **304** in one of the portion pedal cavities **410**. The user then joins the adapter portions **302**, **304** together to sandwich the pedal **406** between the portions **302**, **304**, and inserts the locking screw **404** through the top locking opening **316** and into the bottom locking opening **414**. The locking screw **404** is turned to threadably engage the bottom locking opening **414** to lock the adapter portions **302**, **304** together. If desired, traction screws can be inserted into traction screw openings **312** to allow for secure contact between the pedal adapter **104** and the user's shoes.

An alternative bottom portion **304**, shown in FIGS. **6** and **7**, includes a clipless pedal insert **600**. In this embodiment, instead of using a raised boss to press against the clipless pedal, an insert **600** is placed inside the adapter cavity **410**. The insert **600** includes a form fit portion **602**, which is formed to conform to the shape of a particular pedal. Conforming the insert to the pedal prevents relative movement between the pedal and adapter to securely hold on to clipless pedal **406**. The form fit pedal insert **600** may be manufactured from rubber, plastic, foam or similar material.

Different manufacturers produce clipless pedals of different designs. Thus, an insert **600** may fit one manufacturers pedal, such as Shimano but not another brand, such as Time. To alleviate this problem, insert **600** is designed to be removable from the inside of bottom portion **304** and the inside of top portion **302** and replaced with an insert **600** that is designed for the type of pedal. This results in a great saving to the user who switches clipless pedals **406**. Although a removable insert is preferred, the insert **600** can also be permanently affixed to the pedal adapter **104** without departing from the scope of the present invention. While inserts can be manufactured for specific brands of clipless pedals, it will be appreciated by those skilled in the art that a universal insert can be made from foam or other material.

Thus an improved pedal adapter **104** has been presented. The approved pedal adapter **104** can completely cover and secure a bicycle pedal, such as a clipless pedal. The pedal adapter **104** is lightweight and can be quickly installed and removed. While the invention has been particularly shown and described in the foregoing detailed description, it will be understood by those skilled in the art that various other changes in form and detail may be made without departing from the spirit and scope of the invention.

I claim:

1. A bicycle pedal assembly for use on a bicycle, said bicycle pedal assembly comprising:

- a crank arm;
- a clipless bicycle pedal rotatably supported by said crank arm, said pedal including engagement structure engageable with a shoe having complementary structure for fixing the shoe to the pedal to pedal the bicycle;
- a pedal adapter including first and second portions sandwiching said clipless bicycle pedal therebetween and covering at least a portion of said engagement structure to eliminate the need for the shoe having the complementary structure, each of said first and second portions including at least one engagement surface engageable with a shoe not having the complementary structure to pedal the bicycle regardless of the rotation orientation of said clipless bicycle pedal.

2. The bicycle pedal assembly as in claim 1, in which said pedal adapter includes a hinge coupling said first portion and second portions together in a clam shell fashion.

US 7,013,754 B2

5

3. The bicycle pedal assembly as in claim 1, in which a latching device secures said first portion relative to said second portion.

4. The bicycle pedal assembly as in claim 1, in which at least one of said engagement surfaces includes a traction mechanism. 5

5. The bicycle pedal assembly as in claim 4, in said traction mechanism is at least one traction screw.

6. The bicycle pedal assembly as in claim 1, in which at least one through hole is formed through said pedal adapter such that a cable can be passed through said through hole to assist in securing the bicycle when the bicycle is not in use. 10

7. The bicycle pedal assembly as in claim 1, in which at least one insert is positioned between said first and second portions for engagement with said engagement structure. 15

8. The bicycle pedal assembly as in claim 7, in which said insert includes a form fit portion which is formed to conform to the shape of a particular brand of clipless bicycle pedal.

9. A bicycle pedal adapter for use on a bicycle having a crank arm and a clipless bicycle pedal rotatably supported by the crank arm, wherein the pedal includes engagement structure engageable with a shoe having complementary structure for fixing the shoe to the pedal to pedal the bicycle, said bicycle pedal adapter comprising: 20

a first portion engageable with the clipless bicycle pedal and covering at least a portion of the engagement structure to eliminate the need for the shoe having the complementary structure; 25

a second portion coupled to said first portion, and defining a cavity between said first and second portions, wherein the clipless bicycle pedal is received in said cavity and sandwiched between said first and second portions to fix said adapter to said clipless bicycle pedal and enclose said clipless bicycle pedal between said first and second portions; and 30

6

at least one engagement surface formed on each of said first and second portions, wherein said engagement surfaces are engageable with a shoe not having the complementary structure for pedaling the bicycle regardless of the rotation orientation of said clipless bicycle pedal.

10. The bicycle pedal adapter as in claim 9, in which a hinge couples said first portion and second portions together in a clam shell fashion around said clipless bicycle pedal to enclose said clipless bicycle pedal.

11. The bicycle pedal adapter as in claim 9, in which a latching device secures said first portion relative to said second portion.

12. The bicycle pedal adapter as in claim 9, in which at least one of said engagement surfaces includes a traction mechanism.

13. The bicycle pedal assembly as in claim 12, in said traction mechanism is at least one traction screw.

14. The bicycle pedal adapter as in claim 9, in which at least one through hole is formed through said first and second portions such that a cable can be passed through said through hole to assist in securing the bicycle when the bicycle is not in use.

15. The bicycle pedal adapter as in claim 9, in which at least one insert is positioned between said first and second portions for engagement with said engagement structure.

16. The bicycle pedal adapter as in claim 15, in which said insert includes a form fit portion which is formed to conform to the shape of a particular brand of clipless bicycle pedal.

* * * * *